

UNITED STATES

TITLE: A REMOVABLE BACK SUPPORT APPARATUS FOR USE WITH A MULTI-PURPOSE WEIGHT LIFTING MACHINE

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**[0001]** This application claims the benefit of U.S. Provisional Application No. 60/281,727, filed April 6, 2001.

#### FIELD OF THE INVENTION

[0002] The present invention relates generally to the field of exercise equipment and more particularly to a removable back support apparatus for use with a multi-purpose weight lifting machine to reduce the risk of injury therefrom and to increase the amount of weight that might be safely lifted in performing a variety of exercises, including the behind-neck military press and dumbbell arm curls.

## BACKGROUND OF THE INVENTION

[0003] The behind-neck military press exercise targets the middle and back portions of the shoulders, and it is generally regarded as one of the most important strength training exercises. In the behind-neck military press, the exerciser positions his or her hands on a barbell slightly further than shoulder-width apart. Keeping continuous tension in his arms, the exerciser extends his arms upwardly from a retracted position behind his neck to an arm-extended position above his head without locking his elbows. The motion is generally parallel to the torso of the exerciser. The exerciser's head should be aligned with his torso, and his back should be straight. When lifting heavier weights, there is a tendency to lean forward, a

tendency which can cause serious injury to the muscles of the neck, the shoulders, and/or the back of an exerciser. It is well known to exercise and weight lifting enthusiasts that being seated and using a back support when performing the behind-neck military press reduces the risk of injury to the muscles of the neck, the shoulders, and/or the back of an exerciser and allows an increase in the amount of weight that might be safely lifted.

**[0004]** The dumbbell arm curl exercise targets the front portion of the upper arms. In a starting position for the dumbbell arm curl exercise, using an underhand grip, a weight bearing dumbbell is grasped in either hand of the exerciser with his arms extended at his sides. Using a first arm, the exerciser then curls a first dumbbell upwards, keeping his elbow close to his side. Once the first dumbbell is lifted to a position adjacent to the first arm's shoulder, the first dumbbell is then lowered slowly to return it to the starting position, while simultaneously using a second arm to curl a second dumbbell upwards. After lifting the second dumbbell to a position adjacent to the second arm's shoulder, the exerciser alternates lifting the first and second dumbbells. Ideally, for maximum effectiveness and isolation of the upper arm muscles, the exerciser's upper arms will be motionless and pressed tightly against his rib cage. When performing dumbbell arm curls, especially with heavier weights, there is a tendency for the exerciser to use his back to swing the dumbbells upwards, but to do so risks serious injury thereto. It is well known to exercise and weight lifting enthusiasts that standing against a wall or

being seated and using a back support when performing dumbbell arm curls minimizes unnecessary movement and substantially reduces the risk of injury to the muscles of the neck, the shoulders, and/or the back of an exerciser, while also allowing an increase in the amount of weight that might be safely lifted.

**[0005]** Compact, multi-purpose weight lifting machines, such as, for example, the YORK POWER STATION 3000™ multi-purpose weight lifting machine, available from York Barbell Co., Ltd., of Oakville, Ontario, Canada, for use in developing and maintaining a wide variety of muscles in the human body are well known in the art of exercising devices. Such weight lifting machines typically allow for a significant number of exercises to be performed therewith, including, for example, seated rowing, leg curls and extensions, squats, tricep pressdowns, flat and inclined bench presses, pectoral deck flies, and behind-neck latissimus dorsi pull downs.

**[0006]** However, there is currently no multi-purpose weight lifting machine that, in addition to offering the ability to perform each of the aforementioned weight lifting exercises, also allows an exerciser to perform the behind-neck military press and dumbbell arm curls from a seated position with a back rest. Accordingly, the present apparatus has been developed to overcome this notable deficiency in the prior art.

**[0007]** The primary object of the invention is to provide a back rest that is designed to be used when performing the seated

behind-neck military press or seated dumbbell arm curls with a multi-purpose weight lifting machine, such as, for example, the YORK POWER STATION 3000™ multi-purpose weight lifting machine.

**[0008]** Another object of the invention is to provide an apparatus that reduces the risk of injury while performing the seated behind-neck military press exercise with a multi-purpose weight lifting machine, such as, for example, the YORK POWER STATION 3000™ multi-purpose weight lifting machine.

**[0009]** Yet another object of the invention is to increase the amount of weight a person may lift while performing the seated behind-neck military press exercise with a multi-purpose weight lifting machine, such as, for example, the YORK POWER STATION 3000™ multi-purpose weight lifting machine.

**[0010]** Still yet another object of the invention is to provide an apparatus that reduces the risk of injury while performing seated dumbbell arm curls with a multi-purpose weight lifting machine, such as, for example, the YORK POWER STATION 3000™ multi-purpose weight lifting machine.

**[0011]** A further object of the invention is to increase the amount of weight a person may lift while performing seated dumbbell arm curls with a multi-purpose weight lifting machine, such as, for example, the YORK POWER STATION 3000™ multi-purpose weight lifting machine.

[0012] A yet further object of the invention is to provide a back rest that is relatively easy to mount on and dismount from a multi-purpose weight lifting machine, such as, for example, the YORK POWER STATION 3000™ multi-purpose weight lifting machine.

[0013] A still yet further object of the invention is to provide a back rest that is designed to be used with a multi-purpose weight lifting machine, such as, for example, the YORK POWER STATION 3000™ multi-purpose weight lifting machine, and is relatively inexpensive to manufacture.

#### SUMMARY OF THE INVENTION

[0014] There is thus provided, according to one aspect of the present invention, a removable back support apparatus, for use with a multi-purpose weight lifting machine, comprising a substantially vertically disposed back rest that has a front face and a rear face. The removable back support apparatus further comprises attachment means for removably attaching the back rest to two upright barbell support beams of the multi-purpose weight lifting machine. According to another aspect of the invention, the attachment means comprises ready attachment means for removably attaching the back rest to the two upright barbell support beams of the multi-purpose weight lifting machine without the use of hand tools. According to a further aspect of the invention, the ready attachment means comprises one or more transverse cross members, with each of the cross members respectively in a fastened relation with the substantially

vertically disposed back rest, and with one or more of the cross members being removably attachable to the two upright barbell support beams without the use of hand tools.

**[0015]** According to a still further aspect of the invention, in said fastened relation, a respective horizontal center portion of each of the cross members is securely fastened to the rear face of the back rest by one or more rear face fasteners.

**[0016]** According to another aspect of the invention, the one or more transverse cross members comprise two or more transverse cross beams, so as to define at least an upper and a lower transverse cross beam. According to yet another aspect of the invention, each of said cross beams is of a length equal to or greater than a distance between the two upright barbell support beams of the multi-purpose weight lifting machine. According to an aspect of the preferred embodiment, the length of each of the cross beams is greater than the distance between the two upright barbell support beams of the multi-purpose weight lifting machine.

**[0017]** According to another aspect of the preferred embodiment, each of the cross beams respectively has left and right extremity portions, and the upper transverse cross beam further comprises two pins, with each of the two pins projecting in a rearward and slightly downward direction from each of the left and right extremity portions of the upper transverse cross beam. The configuration, spacing and positioning of the two pins

is such that each of the pins is removably hookable into one of a plurality of apertures in each of the two upright barbell support beams of the multi-purpose weight lifting machine, and such that the upper transverse cross beam, the back rest, and the removable back support apparatus are removably attachable to the two upright barbell support beams without the use of hand tools.

**[0018]** With the pins so hooked, the removable back support apparatus rests in an attached position with respect to the multi-purpose weight lifting machine. When the back support apparatus is removably hooked onto the multi-purpose weight lifting machine in this manner, it may be easily removed from the attached position by simply lifting the back support apparatus and simultaneously pulling it in a forward direction away from the multi-purpose weight lifting machine.

**[0019]** According to a further aspect of the preferred embodiment, the front face of the back rest is covered with a padded material for engaging and comfortably supporting the back of a user in the attached position. According to a still further aspect of the preferred embodiment, the one or more rear face fasteners comprise two or more hexagonally headed threaded bolts.

**[0020]** In use, an exerciser sits facing forward astride a bench of the multi-purpose weight lifting machine and, with the removable back support apparatus in the attached position, presses his or her back against the padded material of the front face of the substantially vertically disposed back rest. The

typical multi-purpose weight lifting machine is equipped with vertically adjustable cradles attached to its upright barbell support beams and a weight bearing barbell resting in balanced relation thereon. To perform a seated behind-neck military press, the exerciser positions his or her hands on the barbell slightly further than shoulder-width apart, and keeping his head aligned with his torso and his back straight and firmly pressed against the back rest, the exerciser lifts the barbell in a motion generally parallel to his torso, extending his arms upwardly to a military press arm-extended position above the head without locking the elbows. Keeping continuous tension in his arms, the exerciser then brings the weight bearing barbell to a military press retracted position behind the neck, without allowing the barbell to rest on his shoulders. The exerciser repeats this motion, moving between the military press arm-extended position and the military press retracted position behind the neck, until the desired number of repetitions (usually between eight and twelve) have been completed, before returning the weight bearing barbell to rest, in said balanced relation on the vertically adjustable cradles attached to the upright barbell support beams of the multi-purpose weight lifting machine.

**[0021]** To perform seated dumbbell arm curls, the exerciser grasps a first and a second weight bearing dumbbell, one each in either hand, and once again sits facing forward astride the bench of the multi-purpose weight lifting machine and, with the removable back support in the attached position, presses his or her back against the padded material of the front face of the

substantially vertically disposed back rest. The exerciser then lifts the first dumbbell from a dumbbell arm curl arm-extended position, in which an arm carrying the dumbbell extends in a generally downward direction, to a dumbbell arm curl retracted position, in which the arm is bent at the elbow, such that the dumbbell is positioned adjacent that arm's shoulder. On moving the first dumbbell back from the dumbbell arm curl retracted position to the dumbbell arm curl arm-extended position, the exerciser moves a second arm carrying the second dumbbell from the dumbbell arm curl arm-extended position to the dumbbell arm curl retracted position. Thereafter, the exerciser alternates lifting the first and second dumbbells, moving each from the dumbbell arm curl arm-extended position to the dumbbell arm curl retracted position, until the desired number of repetitions have been performed.

**[0022]** The removable back support of the present invention is designed to be used with multi-purpose weight lifting machines, and it allows users of such machines to safely add further exercises, such as, for example, the seated behind-neck military press and seated dumbbell arm curls, to their exercise routines. That is, the use of the removable back support apparatus of the present invention in such contexts both reduces the risk of injury to the users of multi-purpose weight lifting machines and allows them to increase the amount of weight they might safely lift.

BRIEF DESCRIPTION OF THE DRAWINGS

**[0023]** The novel features which are believed to be characteristic of the removable back support apparatus for use with a multi-purpose weight lifting machine according to the present invention, which may be embodied in various forms, as to its structure, features, characteristics, organization and combination of parts, functions of related elements of its structure, use and method of operation, and economies of manufacture, together with further objectives and advantages thereof, will be better understood from the following drawings which constitute a part of this specification, and in which a presently preferred embodiment of the invention will now be illustrated by way of example. It is expressly understood, however, that the drawings are for the purpose of illustration and description only, and are not intended as a definition of the limits of the invention. It is to be further understood that in some instances various aspects of the invention may be shown exaggerated or enlarged to facilitate an understanding of the invention. In the accompanying drawings:

**[0024]** **Figure 1** is a front perspective view of a preferred embodiment of a removable back support apparatus for use with a multi-purpose weight lifting machine, shown attached to two upright barbell support beams of an exemplary multi-purpose weight lifting machine, namely, a YORK POWER STATION 3000™ multi-purpose weight lifting machine.

[0025] **Figure 2** is a front perspective view of the back support apparatus of Figure 1 shown removed from the multi-purpose weight lifting machine of Figure 1.

[0026] **Figure 3** is a rear perspective view of the back support apparatus of Figure 2.

#### DETAILED DESCRIPTION OF A PREFERRED EMBODIMENT

[0027] A detailed description of a preferred embodiment follows. It is to be understood, however, that the present invention may be embodied in various forms. Therefore, specific details disclosed herein are not to be interpreted as limiting, but as a representative basis for teaching one skilled in the art to employ the present invention in virtually any appropriately detailed system, structure or manner.

[0028] Figure 1 shows a preferred embodiment of a removable back support apparatus 20 attached to a multi-purpose weight lifting machine 22. The multi-purpose weight lifting machine 22 is preferably of the type shown in Figure 1, having a left upright barbell support beam 34a and a right upright barbell support beam 34b. Each of the upright barbell support beams, 34a and 34b, has a front face 36 that is shaped so as to define a plurality of apertures 38 therein, respectively arranged in a single vertical column. The multi-purpose weight lifting machine 22 shown in Figure 1 also has a vertically adjustable left barbell support cradle 40a and a vertically adjustable right

barbell support cradle 40b, removably attached respectively to the left and right upright barbell support beams, 34a and 34b. The multi-purpose weight lifting machine 22 of Figure 1 will be seen to further comprise a bench 42, and a barbell 44 with weighted disks 46 attached proximate to either end thereof.

**[0029]** The removable back support apparatus 20 comprises a substantially vertically disposed back rest 24 with a padded front face 26. The removable back support apparatus further comprises attachment means for removably attaching the back rest 24 to the upright barbell support beams, 34a and 34b, of the multi-purpose weight lifting machine 22. The attachment means comprises ready attachment means for removably attaching the back rest 24 to the upright barbell support beams, 34a and 34b, of the multi-purpose weight lifting machine 22 without the use of hand tools. The ready attachment means comprises one or more transverse cross members. In the preferred embodiment shown in Figures 1 through 3, the one or more transverse cross members comprise an upper transverse cross beam 30 and a lower transverse cross beam 32. Each of the upper transverse cross beam 30 and the lower transverse cross beam 32 has a left extremity portion, 30a and 32a respectively, and a right extremity portion, 30b and 32b respectively.

**[0030]** Turning now to Figures 2 and 3, the back support apparatus 20 is shown removed from its releasable attachment with the multi-purpose weight lifting machine 22. The upper transverse cross beam 30 comprises a left pin 48a and a right pin

48b, respectively projecting from the left and right extremity portions, 30a and 30b, of the upper transverse cross beam 30 in a rearward and slightly downward direction, as depicted by arrow "A" in Figures 2 and 3, and as best seen in Figure 3.

**[0031]** With specific reference to Figure 3, the substantially vertically disposed back rest 24 of the removable back support apparatus 20 will be seen to further comprise a rear face 50. Each of the transverse cross beams, 30 and 32, has a horizontal center portion, 30c and 32c, and is in a fastened relation with the rear face 50 of the substantially vertically disposed back rest 24. In the fastened relation, each said horizontal center portion, 30c and 32c, of each of the cross beams, 30 and 32, is respectively securely fastened to the rear face 50 of the back rest 24 by one or more rear face fasteners. In the preferred embodiment shown in Figures 1 through 3, and as best seen in Figure 3, each of said one or more rear face fasteners comprises two hexagonally headed threaded bolts 52, positioned proximate to each respective horizontal center portion, 30c and 32c, of the transverse cross beams, 30 and 32.

**[0032]** The configuration, spacing and positioning of the pins, 48a and 48b, on the back support apparatus 20 are such that the left pin 48a on the left extremity portion 30a of the upper transverse cross beam 30 may be removably hooked into one of the plurality of apertures 38 in the left upright barbell support beam 34a on the multi-purpose weight lifting machine 22 at the same time as the right pin 48b on the right extremity portion 30b

of the upper transverse cross beam 30 is removably hooked into a corresponding one of the plurality of apertures 38 in the right upright barbell support beam 34b. With the pins 48a and 48b so hooked, the removable back support apparatus 20 rests in an attached position with respect to the multi-purpose weight lifting machine 22, as shown in Figure 1. In the attached position, the back support apparatus 20 is removably hooked onto the multi-purpose weight lifting machine 22, and it may be readily removed from the attached position without the use of hand tools by simultaneously lifting the back support apparatus 20 and pulling it in a forward direction, as depicted by arrow "B" in Figure 1, away from the multi-purpose weight lifting machine 22.

**[0033]** In use, an exerciser (not shown) sits facing in a forward direction (as depicted by arrow "C" in Figure 1) astride the bench 42 of the multi-purpose weight lifting machine 22 and, with the removable back support 20 in the attached position (as shown in Figure 1), presses his or her back against the padded front face 26 of the substantially vertically disposed back rest 24. To perform a seated behind-neck military press, the exerciser positions his hands on the barbell 44 slightly further than shoulder-width apart, and keeping his head aligned with his torso and his back straight and firmly pressed against the back rest 24, the exerciser lifts the barbell 44 upward in a motion generally parallel to his torso, as indicated by arrow "D" in Figure 1, extending his arms to a military press arm-extended position above the head, without locking the elbows. Keeping

continuous tension in his arms, the exerciser then brings the weight bearing barbell 44 in a downward direction, as indicated by arrow "E" in Figure 1, to a military press retracted position behind the neck, without allowing the barbell to rest on his shoulders. The exerciser repeats this motion, moving between the military press arm-extended position and the military press retracted position behind the neck, until the desired number of repetitions (usually between eight and twelve) have been completed, before returning the barbell 44 to rest, in balanced relation on the cradles, 40a and 40b, attached to the upright barbell support beams, 34a and 34b, of the multi-purpose weight lifting machine 22.

**[0034]** To perform seated dumbbell arm curls, the exerciser (not shown) grasps a first and a second weight bearing dumbbell, 54a and 54b, one each in either hand, and once again sits facing in a forward direction (as depicted by arrow "C" in Figure 1) astride the bench 42 of the multi-purpose weight lifting machine 22 and, with the removable back support 20 in the attached position (as shown in Figure 1), presses his or her back against the padded front face 26 of the substantially vertically disposed back rest 24. The exerciser then lifts the first dumbbell 54a from a dumbbell arm curl arm-extended position, in which a first arm carrying the first dumbbell 54a extends in a generally downward direction, as indicated by arrow "E" in Figure 1, to a dumbbell arm curl retracted position, in which the first arm is bent at its elbow, such that the first dumbbell 54a is positioned adjacent the first arm's shoulder. On moving the first dumbbell

54a back from the dumbbell arm curl retracted position to the dumbbell arm curl arm-extended position, the exerciser moves a second arm carrying the second dumbbell 54b from the dumbbell arm curl arm-extended position to the dumbbell arm curl retracted position. Thereafter, the exerciser alternates lifting the first and second dumbbells, 54a and 54b, moving each from the dumbbell arm curl arm-extended position to the dumbbell arm curl retracted position, until the desired number of repetitions have been performed.

**[0035]** While the invention has been described in connection with a preferred embodiment, it is not intended to limit the scope of the invention to the particular form set forth, but on the contrary, it is intended to cover such alternatives, modifications, and equivalents as may be included within the spirit and scope of the invention. By way of an exemplary modification of this sort, the upper transverse cross beam 30 of the ready attachment means might be provided with clamps in place of the pins, 48a and 48b, in order to effect removable attachment of the back rest 24 and the back support apparatus 20 to the multi-purpose weight lifting machine 22. In a further example, glue or screws might take the place of the hexagonally headed threaded bolts 52. We also note that, although the removable back support apparatus 20 has been specified as having particular utility in performing the seated behind-neck military press and seated dumbbell arm curls using multi-purpose weight lifting machines, the present invention is not limited to uses in association with such exercises, but rather may be used to reduce

risk of injury and to increase the amount of weight a person may lift while performing a number of further exercises. For example, the removable back support apparatus 20 might be used to reduce risk of injury and to increase the amount of weight a person may lift while performing tricep pullovers on multi-purpose weight lifting machines. As well, Figure 1 shows, by way of example, the removable back support apparatus 20 of the present invention attached to the YORK POWER STATION 3000™ multi-purpose weight lifting machine. In this regard, we note that the scope and spirit of the present invention is properly viewed as extending also to uses in association with a significant number of similar multi-purpose weight lifting machines, in addition to the YORK POWER STATION 3000™ multi-purpose weight lifting machine. Obviously, the present invention allows for a wide variety of different possible combinations of the various modifications and alterations specifically contemplated herein. As well, we note again that the foregoing are merely examples of various modifications and alterations that do not depart from the spirit and scope of the invention, and as such, it should perhaps be noted once more that the present invention is limited only by the accompanying claims.